Novel protocol for lutein extraction from microalga Chlorella vulgaris - DTU Orbit (09/11/2017)

Novel protocol for lutein extraction from microalga Chlorella vulgaris
Lutein is a pigment generally extracted from marigold flowers. However, lutein is also found in considerable amounts in microalgae. In this study a novel method was developed to improve the extraction efficiency of lutein from microalga C. vulgaris. Differently from conventional methods, ethanol was used instead of water in the saponification step, which was conducted simultaneously to the solvent extraction, performed using dichloromethane. The amount of lutein extracted from C. vulgaris dried biomass increased more than threefold, from 0.20 ± 0.00 mgLutein/gDM to 0.69 ± 0.08 mgLutein/gDM. Lutein purity was increased from 73.6% to 93.7% by decreasing the ethanol-water ratio from 85% to 50% in the resolubilization step. The novel method was also tested with tetrahydrofuran. The extraction proved to be again more effective than the conventional one; however dichloromethane outperformed tetrahydrofuran in terms of quantity and purity of the recovered lutein.

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